3: Anonymous U-4 (no date) 1920 RH1 Caucasia RH1

for earlier years include also the production of the native undertakings, but in any case their quota is comparatively small. In 1913 Caucasia furnished 31 per cent. of the total Russian output. All Caucasian copper is disposed of in Russia.

Unexploited copper exists in the Naltchinsky Hills and over a small area on each side of the Ossetian Military Road; in both cases the deposits are estimated to be rich.

The production of *Glauber's salt* in Tiflis in 1910, amounting to 725 metric tons, represented nearly half of Russia's total output.

Iron is worked only spasmodically. It occurs chiefly in the Government of Elisavetopol, at Chinarlidz, where the veins are from 2 to 21 metres thick, and as haematite at Sirimadan in the Pambak Mountains and in the Boyan valley. Nearly 2,000 metric tons were produced in 1908, but in no subsequent year does anything approaching that amount appear to have been obtained.

Lead.—There are extensive deposits of argentiferous lead, but they have been little worked. The largest production is that of the Alagir Smelting Co. in Terek; but the metal also occurs in the Lialvar district, in the upper valley of the Kura, and near Kedabek, and shortly before the war was found near Akmetovskoi station in Kuban.

Manganese.—The principal deposit covers an area of nearly 100 square miles in the Kvirili valley in the Government of Kutais, the head-quarters of the industry being at Chiaturi. The ore contains on an average 40 per cent. manganese, 0·16 per cent. phosphorus, and 8 per cent. silicon, but in some workings the proportion of manganese is as high as 50 per cent. The ore is got out by means of hand picks, and is sorted by hand in a primitive way. It is soft and readily mined, and the firmness of the rock renders extensive timbering unnecessary. The miners do not fully exhaust the drifts, but work on them until they become dangerous or, on account of diminishing yield, unremunerative, a point which is soon reached owing

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Other places in Caucasia at which manganese occurs are Kvartala in Batum, where the French Manganese Ore Co. had arranged for the erection of plant at the end of 1913, Seifalu in Elisavetopol, and in the neighbourhood of Samtredi and Novo-Senaki. 347 [471]

Huge beds of *marl* are now being exploited near Novorossiisk by the cement companies there.

Salt.—There are rock-salt deposits in Erivan and Kars. and a certain amount of evaporated salt is produced in Baku and Daghestan. The total output of salt in 1910 was 28,340 metric tons, which consisted of 16,600 tons of rock-salt from Erivan, 6,930 tons of rock-salt from Kars, 4,370 tons of evaporated salt from Baku, and 440 tons of evaporated salt from Daghestan. The total output in 1911 amounted to 37,830 metric tons, and in 1913 to 32,260 metric tons.

Zinc is worked by the Alagir Smelting Co. at Sadon and Alagir, and from blende ore near Vladikavkaz. The company's works, which are 60 miles from the mines, are fitted with modern plant. In 1914 the company were planning a new exploitation, on a large scale, of both lead and zinc. The output of zinc in 1910 was 3,400 metric tons, and in 1912 the combined production of zinc and argentiferous lead was 26,000 metric tons. 328

Other Minerals.—At Soglik, near Dash Kessan, in the Gokcha range (Erivan) there is an inexhaustible supply of *alunite*, containing 37·58 per cent. of alum, but it is very little worked. *Antimony* is mined in small quantities in Tiflis. There is *arsenic* ore at Bechenakh, but up to the present it has not been exploited. There is a small output of *asbestos* from Sharopan, Vzhinevi, and Lechgum in Kutais. There are excellent *bitumen* beds on the Black Sea coast, and *asphalt* is a by-product of the petroleum industry. *Cobalt* is mined in small quantities in Elisavetopol. White *diatomite* (infusorial earth), containing 87 per cent. of silica, is worked at Kissatip, near Akhaltsikh (Tiflis). *Emery* is found at Karabulakh (Elisavetopol). *Gold* exists in very small quantities in the alluvial deposits of the Alindja river, and in the ore of the 135 316

3: Anonymous U-4 (no date) 1920 RH1 Caucasia RH1

135 Kedabek copper mines. *Graphite* and *mercury* have
316 recently been found. *Pyrites* is worked for sulphur in Elisavetopol and Tiflis, and sulphur is also obtained at Bechenakh and Gunur, in Kutais.

(5) Mineral Oils

(*a*) *Sources of Supply*

135 Mineral oil, the great source of Caucasian wealth,
315 is found chiefly in the Governments of Baku, Terek, and Kuban, although small quantities occur elsewhere. Hitherto by far the richest oil-producing area has been that of Baku, comprising the Apsheron Peninsula, Cheleken Island and Holy Island, and the outlying district of Benagadi. In the Apsheron Peninsula lie the older oil-fields: the five belts of Balachani, Sabunchi, Romani, Bibi-Ebyat, and Zabrat, and the comparatively newly-discovered oil district of Surachani, about 12 miles away. Second to those of Baku in importance and apparently of increasing productivity are the Grozni fields in Terek Province. The Maikop oil-fields, in Kuban Province, have since 1912 yielded unsatisfactorily.

In 1908 the Caucasian oil-fields supplied about 22 per cent. of the world's total production, but the proportion has sunk very considerably since then. General figures of the output from 1910 to 1916 are given in Table II of the Appendix (p. 93).

382 The products of the mineral oil include illuminating oils, engine and cylinder oils, solar oils, goudron (asphalt), benzene, residuum (*ostotki*), and crude oil (untreated). Of these, *ostotki* was for years treated as waste, but it is now by far the largest product, having superseded kerosene, which bears a heavy duty, while *ostotki* is untaxed; it has a large sale as fuel for factories, railways, and steamships. Balachani oil is the heaviest in quality; *ostotki* is not so readily formed from the Bibi-Ebyat and Grozni products. Cheleken Island and Telav produce ozokerite (or paraffin wax). The lowest percentage of benzene

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Millet, oats, flax and hemp are also grown in limited quantities in Transcaucasia.

Tobacco has been grown with great success in the sheltered subtropical parts of the Black Sea littoral and in the neighbourhoods of Tiflis, Kutais and Zakatali. Of the total Russian output of high quality "Turkish" tobacco in 1915, it is estimated that 33 per cent. came from Transcaucasia. Of this the heaviest crops and the richest quality was grown round Sukhum and Sochi. The tobacco of Batum and Ozurgeti was little inferior.

Wine is made throughout Transcaucasia, and vine-culture is a secondary occupation of many of the peasants. The wines of the Alazan, of Elisavetpol and of Echmiadzin are celebrated in Russia, and much is exported to that country, but for the most part the vintners cater for the very generous local consumption.

Mulberry-trees flourish on the southern slopes of the Caucasus; about 5,000 tons of silk a year are produced, and are mostly consumed by local industry. In Azerbaijan silk has, like rice, suffered from the recent preference accorded to cotton. Other products are: tea, round Ozurgeti and Chavka; plums, the most luscious of which come from Sochi and Sukhum; oranges from Chavka; olives from Artvin and Sukhum; lemons, apples, liquorice-root, the sun-flower—from which a substitute for linseed oil is obtained—attar of roses, *ramie* fibre, and inconsiderable quantities, consumed locally, of potatoes, lentils, beans, haricots and peas.

Minerals.—It is only in recent years that the discovery of the existence of a belt of oil-bearing rock (*vide* Petroleum, below), extending from the Northern Caucasus to Southern Persia, has attracted the attention of European capital to the mineral potentialities of the Middle East—particularly of the Caucasus and Persia. The effects of this discovery have already been considerable, and it is probable that the coming half-century will witness, on the one hand the transformation of the Middle East from a backward agricultural to an important industrial region; on the other the concentration of political interest on the area between the Kuban and Terek and the Persian Gulf.

The mineral resources of the Caucasus have never been adequately prospected. The Russian Government left the exploration and exploitation of possible mineral deposits to individual enterprise. Thus, with the exception of the very interesting book of Mr. D. Ghambashidze,[1] no reference-books

[1] D. Ghambashidze, *Mineral Resources of Georgia and Caucasia.*

[See cat. 116, pp 252-253 -- Analyst]

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135 [114] 135 316 [78] 471

exist on the subject, and in Mr. Ghambashidze's book the existence of many important deposits is only broadly indicated.

Metals.—Manganese is the only metal which has been adequately worked in Georgia, and the growth of this industry has, by creating a community of miners, had an important effect on the industrialisation and subsequent growth of the Socialist movement in the country.

The principal manganese deposit covers an extent of about 100 square miles along both banks of the river Kvirili, in the Government of Kutais, the centre of the mining region being at the town of Chiaturi. The mines were at first worked by a large number of small native firms who, from lack of expert knowledge and capital, employed very unscientific methods, with the result that there was much waste. Later, however, foreign firms, chiefly German, began to purchase holdings and to organise the industry, and towards the end of the last decade of the nineteenth century Georgian manganese rivalled that of Brazil and India. Great Britain was at first the principal purchaser, but Germany and other Continental countries later absorbed the bulk of the output. The industry reached the height of its prosperity in 1906, when a decrease in demand, unusually high sea-freights, and foreign competition caused a depression which lasted until 1911. In that year a revival of prosperity took place, but with the closing of the Dardanelles at the end of 1914 the industry suffered a severe blow. At the end of 1918 work at the mines had practically ceased, and heavy stocks of ore were lying at Chiaturi and Poti.

Further deposits of manganese exist at Khvartata (Batum), Saifalu (Elisavetpol), Samtredi and Novo-Senaki (Kutais).

Outcrops of *copper* occur in many parts of the Caucasus, and its mining has been in progress from the remotest times. There are three main areas which are known to contain rich deposits: (1) south of Tiflis, and east and west of the Tiflis-Kars Railway; (2) in the Chorokh Valley; and (3) in the Zangezur region.

(1) The Kedabeg group, comprising the mines of Kedabeg, Kelakent and Kara-bulag, situated north-east of Gökcha in the Government of Elisavetpol, have been worked by the American firm of Siemens Brothers, whose production of copper in 1913 amounted to 1,272 metric tons. The Allahverdi, Akhtala and Shambru mines, in the Lialvar Hills, south of Tiflis, are worked by the French Cie Métallurgique et Industrielle du Caucase, their production in 1913 amounting to 4,760 metric tons. Native firms also work mines in the Phambak Hills,

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and at Delijan, Kazakh, Sagali, Saifalu, and elsewhere in the Government of Elisavetpol.

(2) In the Chorokh Basin, the whole length of which is believed to contain rich deposits of ore, the British Caucasus Copper Co. has worked the Dzanzul mine, south of Borchka. In 1912 the production from this mine was 40,000 tons of ore and 3,000 tons of copper, but in the following year the output was disappointing. In the same region Siemens Brothers had begun operations at the Khvartshana mine.

(3) In the Zangezur region difficulties of transport have prevented adequate exploitation, but work has been undertaken by native firms, notably at Synik, Barabatum and Katar. Other considerable deposits are believed to exist in the Rion Valley round Telav and Zakatali, in the Sukhum district and along the Ossetian Military Road.

Iron has been little exploited in the Caucasus, but deposits have been prospected at Khamuli in Kutais, Chachak in Tiflis, on the banks of the Bzib near Sukhum, at Veden in Chechnia, in the Maikop district, and near Lenkoran.

There are deposits of *lead* and *zinc* ore at Sadon, near Vladikavkaz, in the neighbourhoods of Sukhum and Gori, in the Government of Elisavetpol, near Mozdok and Artvin, and elsewhere, but little exploitation has been undertaken. Deposits of *mercury*, *molybdenum*, *antimony*, *iron pyrites*, *cobalt* and *nickel*, and also small quantities of *gold* and *silver* exist, and would probably repay exploitation.

Non-Metals.—*Coal* is exploited in the Caucasus only at the mines of Tkhvibuli in the Government of Kutais, where the annual production for 1911–15 averaged about 5,000 tons. Much of it however was of poor quality. Rich deposits have been prospected at Tkvartcheli, in the Government of Sukhum, and another field has been located near Olti in the Government of Kars.

Deposits of *baryta* have been worked in the Government of Kutais; *asbestos* is produced at Shorapan and elsewhere in Kutais; *sulphur* abounds in the Government of Erivan; *salt* is produced in considerable quantities in the Governments of Baku, Erivan, Kars, and Daghestan; there are *bitumen*-beds on the Black Sea coast; *emery* is found at Kara-Bulakh; fine *lithographic stone* is obtainable at Amlivi, near Tiflis, and *pumice-stone* near Kars; *mica* and *graphite* also exist.

Mineral Springs.—The Caucasus is celebrated for its mineral springs, and before the Revolution many thousands of Russians, and even invalids from Western Europe, visited the health-

Naphtha

.135 Areas of natural oil or naphtha are often found in the neighborhood of those rich in mineral waters. In the entire Caucasus there are four major naphtha areas, two at each extremity of the Great Caucasus: in the northwest that of Krasnodar and Maikop; and in the southeast, that of Baku which has its natural continuation on the eastern shore of the Caspian in the Krasnovodsk area, on and around the peninsula (formerly the island) of Cheleken. There are two such areas in the center of the system, one north of the Great Caucasus, the area of Groznyi, and one in the south, that of the Shirak' and Kara-Yazy steppes, southeast of Tiflis. They are located at approximately the same longitude, but the southern one extends further west, into the Kvirila valley west of the Meskhi-Surami range. Here oil has been found near the town of Sachkheri in the neighborhood of the world-famous manganese deposits of Chiat'uri.

More detailed information on the naphtha sources as well as of mineral deposits will be given in the chapter on Economic Geography.

Continent Lifting

¥133 A gradual raising of the continental mass upon which the Caucasus rests can be observed throughout the ages. Aside from a

Naphtha and Thermal Springs

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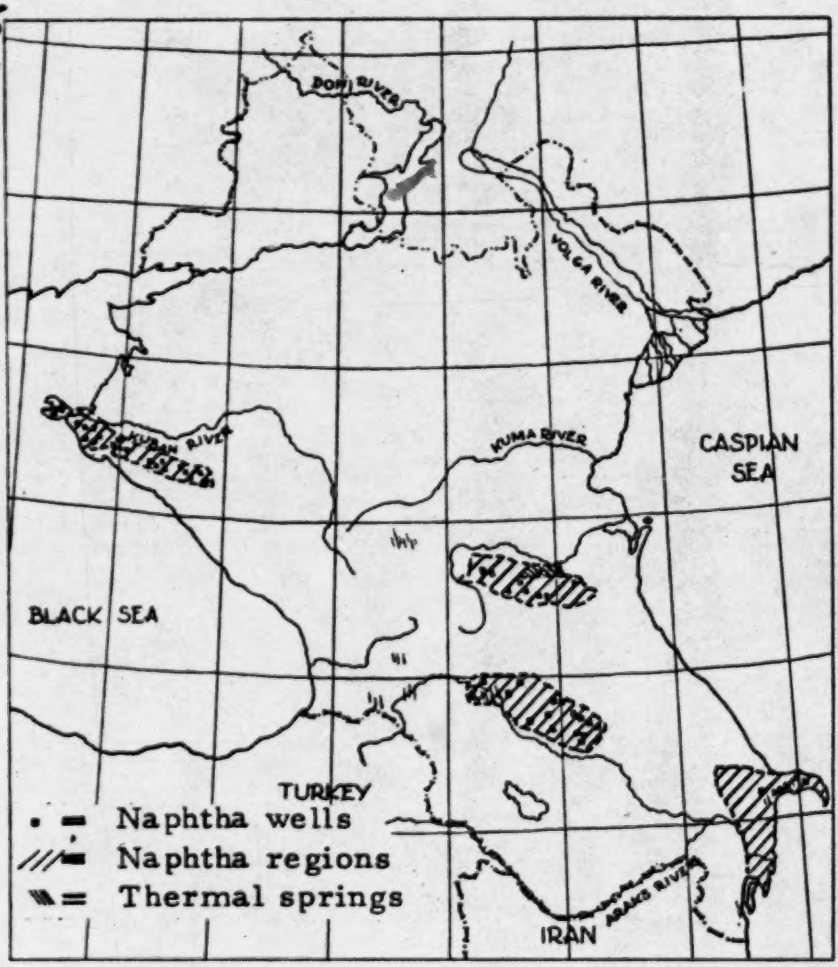

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The Donets ridge, the major portion lying within the Ukraine, penetrates the oblast between the lower Don and its right affluent, the Northern Donets. It is a plateau of limestone and sandstone, which is deeply dissected by river courses and ravines. On the higher points burial mounds of the ancient steppe dwellers are often found. The villages, normally surrounded by gardens and orchards, lie along the ravines and valleys of small streamlets. A similar landscape is represented by the outliers of the Central Russian upland to the north. The Don steppe, on the contrary, constitutes very level terrain. The wide river valleys, where streams proceed with a sluggish current, are often filled with salt lakes, and salt flats frequently break the expanse of black-earth and chestnut soils which characterize the region. Toward the east the relief gradually merges with the features of the Caspian lowland.

Normally the Don is not a very abundant river, but spring freshets raise its level considerably. At its mouth, on the Taganrog Gulf of the Sea of Azov, it forms a large delta, which, together with the shallow waters of the adjoining sea, abounds in fish of many varieties.

The climate is continental, with hot summers and severe, snowless winters. Precipitation varies from 16 inches annually in the west to 12 inches in the east and occurs chiefly in the summer months, in frequent heavy downpours. Easterly prevailing winds blowing in the spring and summer from the dry steppes and deserts of Central Asia and Kazakhstan present a serious danger of drought to the crops. Drought conditions are especially marked in the southeast, along the Sal River, where black earth is largely replaced by chestnut soils. In the well-watered flood plain of the lower Don, alluvial pastures are important for the raising of dairy cattle.

The eastern wing of the Donets Basin penetrates into the oblast along the Northern Donets River. Anthracite predominates in this area and represents about one fifth of the total reserves of the basin. The major coal-mining centers are Shakhty and Novoshakhtinsk. Other coal mines are concentrated in the areas of Gukovo, north of Krasnyy Sulin, and Gundorovka, west of Kamensk-Shakhtinskiy. In the Bogurayev coal field, at the intersection of the Northern Donets River and the Likhaya-Stalingrad railroad, coal is mined at Koksovyy (characteristically named for coke) north of the railroad and at Sinegorskiy to the south. Belaya Kalitva, at the center of this field, has limestone and glassworks. Anthracite dust from the mines is used to feed the power station of Artemovskiy, an eastern suburb of Shakhty, and the Nesvetay station

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in a southwestern suburb of Krasnyy Sulin. The former plays an important role in the mechanization of the coal-mining operations. Before the Second World War, more than 10 percent of the Donbas coal was mined within Rostov Oblast.

On the basis of the coal resources, heavy industry is operating metallurgical plants at Taganrog and Krasnyy Sulin. Rostov is the home of *Rossel'mash*, the largest agricultural machinery plant of the USSR. Agricultural implements are also manufactured at Morozovsk. Other centers engaged in the production of machinery and metal products are Taganrog, Novocherkassk, Glubokiy, and Likhovskoy (at Likhaya station).

In the northern grain-growing district, wheat and sunflower are the dominant crops. Toward the southeast, barley and mustard become important; further on, toward the Caspian Lowland, the emphasis shifts to stock raising. Horses and meat cattle are gradually replaced by sheep in the drier areas. Cotton is grown to some extent in the south and the southeast. Several Cossack villages along the Don River, notably Tsimlyanskaya and Razdorskaya, have extensive vineyards. In a wide zone through the urban and heavily industrialized section of Taganrog-Rostov-Shakhty, truck gardening and the raising of dairy cattle are the principal agricultural activities. The principal agricultural centers are Millerovo and Chertkovo in the north and Sal'sk (with near-by Gigant state farm, one of the largest grain farms of the USSR) in the southeast. These and other towns throughout the oblast mill flour, extract sunflower oil, and process tobacco. The fish catch of the Don delta and adjacent Taganrog Gulf is processed at Azov, a small port southwest of Rostov.

Rostov Oblast is settled by Russians and a Ukrainian minority. Prior to the Second World War some Kalmyk elements were organized into a Kalmyk national rayon, northwest of Zimovniki. In 1944, following the abrogation of the Kalmyk Autonomous SSR, the rayon was also abrogated, and presumably the population was resettled elsewhere. In this connection, Rostov Oblast also acquired the westernmost section of the former Kalmyk Autonomous SSR.

Rostov lies on the elevated, right bank of the Don River at the head of the delta. Thanks to its favorable location at the junction of trade routes between the Black Sea, the Volga, the Ukraine, the European Center, and the Northern Caucasus, it developed early into an important commercial center and transportation hub. With the construction of the

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SU 631 928 C 631 728 persed and resettled, and the Karachay lost official recognition. The autonomous unit was abolished. Its major portion, including the capital, Mikoyan-Shakhar, now Klukhori, and the resort Teberda, and the village Uchkulan, now Madniskhevi, were ceded to the Georgian SSR, the strip along the upper Laba River passed to Krasnodar Kray; another portion, including the village Pregradnaya, was annexed to Cherkess Autonomous Oblast; the remainder became part of Stavropol' Kray proper.

SU 241 C 241 The climatic and soil conditions of the region are favorable to the development of grain farming and the raising of livestock for wool and meat, activities which prevail for similar reasons in the dry steppes of the Lower Volga Region, in northern Kazakhstan, and in Western Siberia. The main crops are winter wheat, sunflowers in the west, and cotton in the east. In the section bordering on the upper and middle Kuma River, irrigated farming is devoted to the raising of orchards, garden crops, and vineyards, the latter particularly in the Budennovsk–Georgiyevsk area. With the construction of the Nevinnomyssk Canal, to be completed during the current Five-Year Plan, the glacier-fed Kuban' River will be linked with the Yegorlyk, an affluent of the Manych, and new areas will be put under irrigation in the western part of Stavropol' Kray. Truck produce is grown intensively in the relatively urban areas of the health resorts (Pyatigorsk, Kislovodsk, and others) in the south and in the southwestern mountain area garden and dairy farming is carried on. In the northern and eastern steppes the raising of sheep is most important. On specially organized state farms two major breeds predominate: the merino sheep for the production of fine wool and the *volosh* sheep, which furnishes meat and coarse wool. The Alpine pastures in the southwest support the so-called Karachay sheep, which also is used mainly for meat. Dairy cattle are raised in the health resort district, and hogs and horses on the mountains slopes.

SU 236 C 236

SU [135] C [135] SU 435* C 438 The mineral resources of the region consist only of coal, which is worked in small amounts at Khumarinskoye and Ordzhonikidzevskiy, just north of Klukhori, of raw material for the chemical industry of Cherkess Autonomous Oblast, and of the mineral springs in the Pyatigorsk-Kislovodsk area. The products of agriculture and of the pastoral economy are partly processed within the region; some are exported in semi-processed form to other areas of the USSR. The principal export items are grain, vegetable oil, meat, tallow, dairy products, raw wool, fruits, and vegetables. The local industries are scattered

Until 1936 Transcaucasia formed a single political unit: the Transcaucasian Soviet Federated Socialist Republic, then one of the union republics of the USSR. With the promulgation of the 1936 Constitution, this federated republic was split up into its primary components based on the three principal nationalities: Armenian, Azerbaijan, and Georgian SSR's. Minor nationalities, such as Abkhaz, Adzhars, and Ossetians, are organized into lesser autonomous units such as autonomous SSR's or autonomous oblasts.

Petroleum is the most important single asset of Transcaucasia. The Baku oil region of world-wide significance is the principal petroleum producer of the USSR, furnishing more than one half the total output. Pipe lines for crude oil, kerosene, and other petroleum products lead from Baku across the entire region to Batumi on the Black Sea, next to Baku, the principal oil port and refining center of Transcaucasia. Before the Second World War the petroleum industry accounted for two fifths of all factory workers, two thirds of the use of electric energy, more than one half the industrial production, and almost two thirds of the exports of Transcaucasia. Since then, however, the creation of new industries and the increase of electric power sources have reduced the relative importance of this branch of the economy. Among the other important power resources are the coal mines of Tkibuli and Tkvarcheli in Georgia, especially the reserves of hydroelectric power, which equal the reserves of the European part of the USSR. Among the most important metal deposits are the manganese mines of Chiatura (Georgia), the second largest in the world, copper in Armenia, and iron in Azerbaijan.

Manufacturing industries are mainly devoted to the processing of the local agricultural products: fruit canning, wine-making, distilling, and cotton ginning. Azerbaijan has a well-developed textile industry, and many of the precious woods are used in wood-working plants. Heavy metallurgy is represented by the steel mills of Rustavi (Georgia) and the ferro-manganese works of Zestafoni (Georgia), and there are machinery plants in many of the large cities. Chemicals and cement are also produced.

In connection with the varied natural conditions and under the influence of the vertical zoning in the mountains, all rural economy forms are represented—from orchard farming in the irrigated sections to nomadic livestock raising in the drier areas. The land is divided according to usability as follows: one fifth is arid, due to the presence of rocks, sands, or marshes; another fifth is forested; more than one third is